

10/582,967

IN THE CLAIMS

Claims 1 and 9 and 11 are concatenated to claim 1 and amended, after concatenation claim 9 and 11 are cancelled. Claim 2-8 are cancelled. Claim 10 is amended as 'according to claim 1' instead of 'according to claim 9'. Claim 15 and claim 16 are added. Claim 15 is copied from claim 12 and claim 16 is copied from claim 13. Claim 12 is amended as 'according to claim 1' instead of 'according to claim 2 or claim 9'. Claim 13 is amended as 'according to claim 1' instead of 'according to claim 2 or claim 9'. Claim 15 is amended as 'according to Claim 10' instead of 'according to claim 2 or claim 9'. Claim 16 is amended as 'according to Claim 10' instead of 'according to claim 2 or claim 9'. Claim 14 is cancelled.

1. (Concatenated and amended)

A distributed database system comprising:

plurality of administration domains,

wherein

each of said administration domains comprising:

one or more database administration apparatuses,

which administers database allocated

on said

database administration apparatuses

themselves or client computers

wherein

client computers are comprising:

at least one or more CPU,

and main memories,

and one or more

network Information cards;

on the network

in said administration domain;

a topology administration server

which administers information

of said database management systems

such as data dictionary,

or locking status,

or referential integrity status,

or physical location of rows divided

horizontally to the tables including sited in
the databases in the other domains,
or physical location of columns divided
vertically to the tables including sited in
the databases in the other domains,
or multi transactions commit counter,
or meta data of said database
management systems,
or meta data of file systems on which
said database management systems
exist;

and said client computers,

which are allocated on the network
beneath said database

administration apparatuses administered
with said topology administration server;

wherein

said topology administration servers exchange their topology information each
other,

and database administration apparatuses and said computers
can be real machine or can be virtual machine also,

and said topology administration server comprises:

storage for topology information, which stores topology information,
including certain information correlating a database object identifier,
which is information

for identifying a database object administered
by said database administration apparatus,
with an identifier
of a database administration apparatus
for identifying a database administration
apparatus administering the database object;

a receiver for a cache request,

which receives a cache request

including said database object identifier transmitted
from said client computers

for caching a database object identified

by said database object identifiers;
an acquisition unit,
for an identifier of a database administration apparatus,
which acquires a corresponding identifier
of a database administration apparatus
from said storage
for topology information
based on the database
object identifier included
in the cache request received
by said receiver
for a cache request;
a transferring unit for a cache request,
which transfers said cache request
to the database administration apparatus identified
by the identifier
of the database administration apparatus,
in which said identifier is acquired
by said acquisition unit
for an identifier
of a database administration apparatus;
a receiver for cache-completed information,
which receives cache-completed information,
which is information indicating caching
of the database object
to the computer;
a cache updating unit for topology information,
which updates the cache-completed information
of topology information stored
in the storage
for topology information
to the current status based
on the cache-completed information received
by the receiver
for cache-completed information;
an exchanging unit for topology information,

which exchanges topology information
with the other topology administration server
administrating the other administration
domain communicable via network;

said computer comprises:

a transmitter for a cache request,
which transfers a cache request,
a receiver for a database object,
which receives the database object returned
in accordance
with the transmission
of the cache request
by said transmitter
for a cache request;
and a caching unit for a database object,
which caches a database object received
by the receiver
for a database object;

and said database management system comprises:

a receiver for a cache request,
which receives the cache request transferred
by the topology administration server;
and a copy and transmission unit for a database object,
which copies and transmits the database object
in accordance
with the cache request received
by the receiver for a cache request.

10. (Currently renumbered and amended)

The distributed database system according to claim 1,
wherein said topology information correlates
lock information relating to a lock,
which is operated by a database object,
with a database object identifier;
and said topology administration server comprises:
a receiver for lock-operation information,
which receives the lock information,
a lock updating unit for topology information,
which updates lock information
of topology information,
which is stored
in the storage
for topology information,
to the current status based
on the lock information received
by the receiver
for lock-operation information.

12. (Currently renumbered and amended)

The distributed database system according to claim 1,

wherein said database administration apparatus comprises:

a transmitter for an update-operation instruction,
which transmits an update-operation instruction,
which is an instruction
for update-operation
of a database object,
to a client apparatus
of a computer caching the database object
upon executing the update-operation
with respect to the database object held therein;

and said computer comprises:

a receiver for an update-operation instruction,
which receives an update-operation instruction,
and an update-operation unit for a database object,
which updates the database object cached
in the caching unit
for a database object based
on the update-operation instruction received
by the receiver
for an update-operation instruction.

13. (Currently renumbered and amended)

The distributed database system according to claim 1,

wherein said database administration apparatus comprises:

a receiver for update-operation information,

which receives update-operation information relating
to the update-operation
on a database object,

an update-operation unit,

which executes the update-operation
on the database object held therein
based on the update-operation information received
by the receiver
for update-operation information,

and a transmitter for an update-operation instruction,

which transmits an update-operation instruction
of a cached database object
to a client apparatus
of a computer caching the database object based
on said update-operation information;

and said computer comprises:

a transmitter for update-operation information,

which transmits update-operation information,

a receiver for an update-operation instruction,

which transmits an update-operation instruction,

and an update-operation unit for a database object,

which updates the database object cached
by the caching unit

for a database object

based on the update-operation instruction received
by the receiver

for an update-operation instruction.

15. (Currently renumbered and amended)

The distributed database system according to claim 10,

wherein said database administration apparatus comprises:

a transmitter for an update-operation instruction,
which transmits an update-operation instruction,
which is an instruction
for update-operation
of a database object,
to a client apparatus
of a computer caching the database object
upon executing the update-operation
with respect to the database object held therein;

and said computer comprises:

a receiver for an update-operation instruction,
which receives an update-operation instruction,
and an update-operation unit for a database object,
which updates the database object cached
in the caching unit
for a database object based
on the update-operation instruction received
by the receiver
for an update-operation instruction.

16. (Currently renumbered and amended)

The distributed database system according to claim 10,

wherein said database administration apparatus comprises:

a receiver for update-operation information,

which receives update-operation information relating
to the update-operation
on a database object,

an update-operation unit,

which executes the update-operation
on the database object held therein
based on the update-operation information received
by the receiver
for update-operation information,

and a transmitter for an update-operation instruction,

which transmits an update-operation instruction
of a cached database object
to a client apparatus
of a computer caching the database object based
on said update-operation information;

and said computer comprises:

a transmitter for update-operation information,

which transmits update-operation information,

a receiver for an update-operation instruction,

which transmits an update-operation instruction,

and an update-operation unit for a database object,

which updates the database object cached
by the caching unit

for a database object

based on the update-operation instruction received
by the receiver

for an update-operation instruction.